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(54) A METHOD FOR HANGING POULTRY OR PARTS THEREOF ON AN OVERHEAD CONVEYOR, A SYSTEM AND AN APPARATUS

(57) A method for hanging poultry in an overhead conveyor provided with carriers, the method using a system comprising:
- an overhead-conveyor-section of the overhead conveyor; and
- a first conveyor for conveying the poultry towards a section thereof being below the overhead-conveyor-section; and in the method:
- the poultry is conveyed via the first conveyor towards the section;
- an operator picks the poultry or parts thereof from the section; and
- the operator hangs said poultry in the carriers being conveyed along the overhead-conveyor-section;
wherein the system comprises a second conveyor below the first conveyor and arranged for carrying the operator, and the method comprises the step of carrying the operator via the second conveyor beside the section of the first conveyor and in the direction of the carriers in the overhead-conveyor-section while said operator is picking and hanging said poultry.

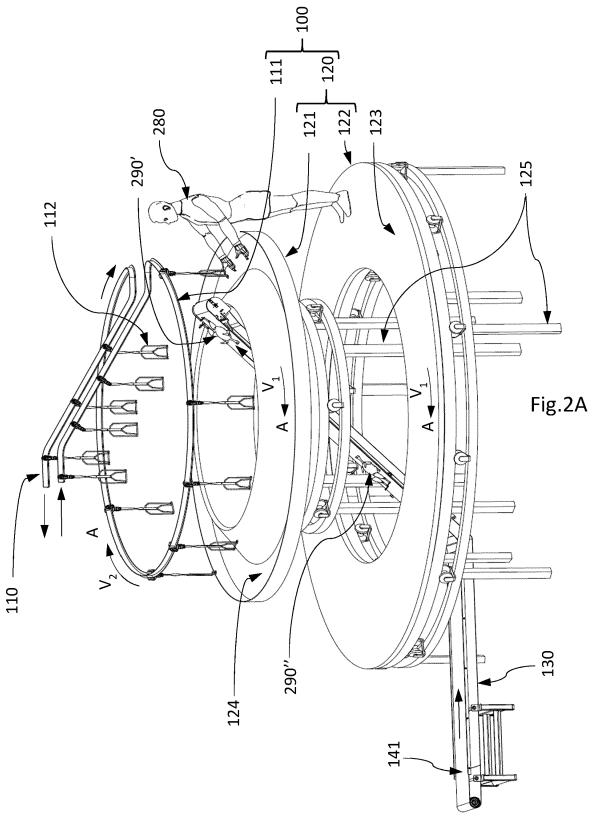

Fig.2A

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Description

[0001] The present invention relates to a method for hanging poultry or parts thereof in an overhead conveyor provided with carriers for conveying the poultry or parts thereof while being hanged from said carriers, the method using a system comprising

- an overhead-conveyor-section of the overhead conveyor; and
- a first conveyor for conveying the poultry or parts thereof towards a section thereof arranged below the overhead-conveyor-section;

and in the method

- the poultry or parts thereof are conveyed via the first conveyor towards the section;
- an operator picks the poultry or parts thereof from said section; and
- the operator hangs said poultry or parts thereof in the carriers when said carriers are being conveyed along the overhead-conveyor-section.

[0002] Methods for hanging poultry in an overhead conveyor are already known. For example, CO_2-stunned poultry is to be hanged on the overhead conveyor fast enough to be slaughtered and processed. To facilitate hanging, the poultry may be conveyed via a first conveyor to a section thereof being at least below a section of the overhead conveyor. For the sake of clarity, the latter will be referred as the overhead-conveyor-section. Thus, the operator being beside the section of the first conveyor may therefore pick and hang said poultry in the carriers, e.g. shackles, when being conveyed along the overhead-conveyor-section with no need to walk to a different spot.

[0003] WO2000041568 discloses a method and an arrangement for hanging slaughtered poultry from hooks. A belt conveyor transports poultry to a number of people, and above the belt conveyor there is a part of a path of an overhead conveyor bearing the hooks, from which the people hang the poultry being supplied on the belt conveyor.

[0004] US4090275 discloses a conveyor tray system for carrying entrails from carcasses having a plurality of separate tray units, each tray unit being capable of receiving a set of entrails from a carcass moving on a conveyor system. It further comprises a platform to be moved along a pair of support rails at a same speed as the carcass.

[0005] A "conveyor" is to be understood as mechanical apparatus arranged for moving items or people from one place to another via an endless movable element, such as an endless movable belt, chain, platform or the like, being driven by drive means.

[0006] A problem is that slaughterhouses may be expected to process poultry at high speeds, such as 15.000 birds per hour or even higher speeds. Thus, the speed of the carriers may be such that the operator has not enough time to hang poultry in all of them, and carriers of the overhead conveyor may be empty.

[0007] It is an object of the invention to alleviate this problem. To this end, a method according to the preamble of claim 1 is characterized in that the system further comprises a second conveyor arranged for carrying the operator beside the section of the first conveyor and in the same direction as the carriers being conveyed along the overhead-conveyor-section. In this way, speed of the carriers is reduced relative to the operator being carried by the second conveyor.

[0008] A second aspect of the invention relates to a system comprising:

- an overhead-conveyor-section of the overhead conveyor; and
- a first conveyor for conveying the poultry or parts thereof towards a section thereof arranged below the overhead-conveyor-section;

wherein the system further comprises a second conveyor being below the first conveyor and arranged for carrying an operator beside the section of the first conveyor and in the same direction as the carriers in the overhead-conveyor-section. In this way, the operator may be carried below the overhead-conveyor-section and the system may help an operator to hang poultry or parts thereof in the carriers according to the method.

[0009] The second conveyor may be designed such that the operator is sitting down on a seat being conveyed by an endless chain. In a different embodiment, it is preferred that the second conveyor comprises a endless movable belt or platform arranged below and beside the section of the first conveyor, on which the operator may stand up while being carried. In this way, picking and hanging is improved in the method. Preferably, a vertical distance between the first endless movable element at the section and the endless movable belt or platform of the second conveyor is within a range between 60 cm and 100 cm.

[0010] In an embodiment, the second conveyor is a carousel conveyor wherein the movable belt or platform for carrying the operator defines a substantially horizontal conveying loop such that the loop is arranged below the overhead-conveyor-section. In this way, the operator may be carried endlessly in the method. The loop may have an elliptical shape or O-shape. It is preferred that the overhead-conveyor-section forms an open loop arranged concentrically to the horizontal conveying loop relative a vertical axis, that is from a top view.

[0011] In an embodiment, the conveying speeds of the carousel conveyor and the carriers in the overhead-conveyor-section are arranged such that the carriers move forward relative to the operator being carried. In this way, the operator may be continuously provided with empty carriers as the filled carriers move further relative to the operator. For example, if the carousel conveyor is ar-

ranged for carrying the operator at a speed V_1 and the carriers are conveyed at a speed V_2, the ratio V_1/V_2 is below 1, preferably between 0.4 and 1, more preferably between 0.6 and 1, and most preferably between 0.8 and 1. In this example the overhead-conveyor-section is concentric.

[0012] The first conveyor may convey the poultry or parts thereof freely or contained in crates. It may be linear or may have a U-shape. It is preferred that the first conveyor is arranged such that the section may convey in the same direction as the direction of the carriers along the overhead-conveyor-section. It is more preferred that the first conveyor is a further carousel conveyor and the poultry may be conveyed endlessly via an endless belt, platform or chain section or sections defining a substantially further horizontal conveying loop having an elliptical or O-shape. From a top view, the further carousel may be concentric to the overhead-conveyor-section, the latter forming an open loop, and preferably arranged also concentric to the carousel conveyor such that the further horizontal conveying loop is above and beside the horizontal conveying loop of the carousel conveyor. The conveying speeds of the horizontal conveying loop and the further horizontal conveying loop may be synchronized.

[0013] In an embodiment, the system also comprises a further conveyor for feeding the poultry or parts thereof to the further carousel conveyor. Even more preferably, the system may comprise means for controlling the speed of the further endless belt of the further conveyor to control the feeding of poultry to the further carousel conveyor, such as a push button or the like, provided in the first or second conveyor to start/stop the further conveyor. In this way the operator may stop feeding of poultry or parts thereof. The push button may be arranged to be pressed with the hand or with the foot. Another example is the use of photovoltaic cells for detecting when the operator is approaching/moving away relative to the further conveyor to activate/deactivate said further conveyor.

[0014] The invention will hereinafter be further elucidated with reference to the drawing of an exemplary embodiment of an apparatus according to the invention that is not limiting as to the appended claims.

[0015] In the drawing:

- figure 1 shows a view of a system;
- figure 2A shows the system of figure 1 with an operator standing in a first position; and
- figure 2B shows the system of figure 1 with an operator standing in a second position;

[0016] Figure 1 depict an embodiment of a system 100 according to the invention. The system 100 comprises a section 111 of an overhead conveyor 110 and an apparatus 120.

[0017] The section 111, referred from now on as the overhead-conveyor-section 111, defines an open loop having substantially a circular shape. The overhead conveyor comprises carriers 112, in the present example shackles, that are conveyed by a chain and a first drive means (not depicted).

[0018] The apparatus 120 comprises a first conveyor 121 and a second conveyor 122. In the present embodiment both conveyors are supported by a frame 125. However, it is important to note that the system 100 may comprise conveyors supported by independent frames.

[0019] The second conveyor 122 is a carousel conveyor 122 comprising an endless movable element 123, in the present embodiment a platform 123 being driven by a drive means (not shown) to convey along a substantially horizontal loop. The platform 123 has an O-shape and is arranged concentric to the overhead-conveyor-section 111 along a vertical axis.

[0020] The first conveyor 121 is a further carousel conveyor 121 also having an endless movable element 124, in the present embodiment a receptable 124 comprising at the bottom a platform. It is driven also by a further driven means to convey along a further substantially horizontal loop. Further, the platform 123 and the receptacle 124 are synchronized.

[0021] As shown in figure 1, the platform 123 and the receptacle 124 are concentrically arranged along a vertical axis, the latter being above and beside the platform 123. The vertical distance between them in the vertical is 90 cm.

[0022] Finally, the system 100 also has a further conveyor 130 comprising an endless belt 141 for feeding poultry to the receptacle 124.

[0023] Figure 2A and 2B depicts the system 100 in use. For the sake of clarity, only one operator 280 is represented standing up on top of the platform 123 of the carousel conveyor 122. However, two or more of them may be distributed along said belt.

[0024] In figure 2A the operator 280 is standing up in a first position on the platform 123 of the carousel conveyor 122. The platform 123 conveys in the direction A at a conveying speed V_1 to carry the operator 280. Thus, after a short period of time, the operator 280 will be standing up in a second position as depicted in figure 2B.

[0025] Poultry 290 is fed by the further conveyor 130 to the receptacle 124 of the further carousel conveyor 121, the latter being conveyed at the direction A. For the sake of clarity, only a first chicken 290' and a second chicken 290" are depicted.

[0026] The operator 280 picks a first chicken 290' from the receptacle 124 (figure 2A) and hangs it in carrier 120' being conveyed in the overhead-conveyor-section 111 (figure 2B).

[0027] The carriers 112 are being conveyed in the overhead-conveyor-section 111 in the same direction A but at a conveying speed V_2. In the present embodiment the ratio V_1/V_2 is 0.8, meaning that the conveying speed of the carriers 112 is higher than the conveying speed of the operator. Thus, the carriers 112 move forward relative to the operator 280 being carried on the platform 123. The operator 280 may then pick the second chicken

290" being conveyed on the receptacle 124 and hang it on an empty carrier 112" being available (fig 2B) without changing the spot in the platform 123 where he is standing on.

Claims

1. A method for hanging poultry (290) or parts thereof in an overhead conveyor (110) provided with carriers (112) for conveying poultry (290) or parts thereof while being hanged from said carriers (112), the method using a system (100) comprising:

   - an overhead-conveyor-section (111) of the overhead conveyor (110); and
   - a first conveyor (121) for conveying the poultry (290) or parts thereof towards a section thereof being below the overhead-conveyor-section (111);

   and in the method:

   - the poultry (290) or parts thereof is conveyed via the first conveyor (121) towards the section;
   - an operator (280) picks the poultry (290) or parts thereof from the section; and
   - the operator (280) hangs said poultry (290) or parts thereof in the carriers (112) being conveyed along the overhead-conveyor-section (111);

   characterized in that the system (100) comprises a second conveyor (122) below the first conveyor (121) and arranged for carrying the operator (280), and the method comprises the step of carrying the operator (280) via the second conveyor (122) beside the section of the first conveyor and in the same direction of the carriers (112) in the overhead-conveyor-section (111) while said operator (280) is picking and hanging said poultry (290) or parts thereof.

2. The method according to claim 1, wherein the operator (280) is carried while standing up.

3. The method according to anyone of the claims 1 or 2, wherein the overhead-conveyor-section (111) defines an open loop and wherein the second conveyor (122) is a carousel conveyor and in the method the operator (280) is carried endlessly along a horizontal conveying loop below the open loop.

4. The method according to claim 3, wherein the conveying speed of the carousel conveyor (122) and the carriers (112) in the overhead-conveyor-section (111) are arranged such that the carriers (112) move forward relative to the operator (280) being carried.

5. The method according to anyone of claims 3 to 4, wherein the first conveyor (121) is a further carousel conveyor (121) and in the method the poultry (290) or parts thereof is conveyed endlessly via the further carousel conveyor (121) along a further horizontal conveying loop arranged above the horizontal conveying loop of the carousel conveyor.

6. A system (100) for helping at least one operator (280) to hang poultry (290) or parts thereof in an overhead conveyor (110) provided with movable carriers (112) for conveying poultry (290) or parts thereof while being hanged from said carriers (112), the system (100) comprising

   - an overhead-conveyor-section (111) of the overhead conveyor (110); and
   - a first conveyor (121) for conveying the poultry (290) or parts thereof towards a section thereof being below the overhead-conveyor-section (111);

   characterized in that the system (100) further comprises a second conveyor (122) being below the first conveyor (121) and arranged for carrying the at least one operator (280) beside the section of the first conveyor and in the same direction of the carriers (112) in said overhead-conveyor-section (111).

7. The system (100) according to claim 6, wherein the second conveyor (122) comprises a belt or platform arranged for carrying the at least one operator (280) while being standing up.

8. The system (100) according to claims 6 or 7, wherein the overhead-conveyor-section (111) defines an open horizontal conveying loop and the second conveyor (122) is a carousel conveyor (122) wherein its belt or platform defines a horizontal conveying loop under the open horizontal loop.

9. The system according to claim 8, wherein the conveying speeds of the carrousel conveyor (122) and the carriers (112) in the overhead-conveyor-section (111) are arranged such that the carriers (112) move forward relative to the operator being carried.

10. The system according to claim 9, wherein the carrousel conveyor (122) is arranged for carrying the operator at a speed V_1, and the carriers are conveyed at a speed V_2, wherein the ratio V_1/V_2 is below 1, preferably between 0.4 and 1, more preferably between 0.6 and 1, and most preferably between 0.8 and 1

11. The system (100) according to claim 6 to 10, wherein the first conveyor (121) is a further carousel conveyor (121) and comprising a further endless movable belt

or platform defining a further horizontal conveying loop such that the horizontal conveying loop and the further horizontal conveying loop are concentric along a vertical axis.

12. The system (100) according to claim 11, wherein a vertical distance between the conveying loop and the further conveying loop is within a range between 60 and 100 cm.

13. The system (100) according to claim 12, comprising a further conveyor for feeding the poultry (290) or parts thereof to the further carousel conveyor (121).

14. The system (100) according to claim 12, comprising means for controlling the speed of the further conveyor to control the amount of poultry (290) or parts thereof to be fed to the further carousel conveyor (121).

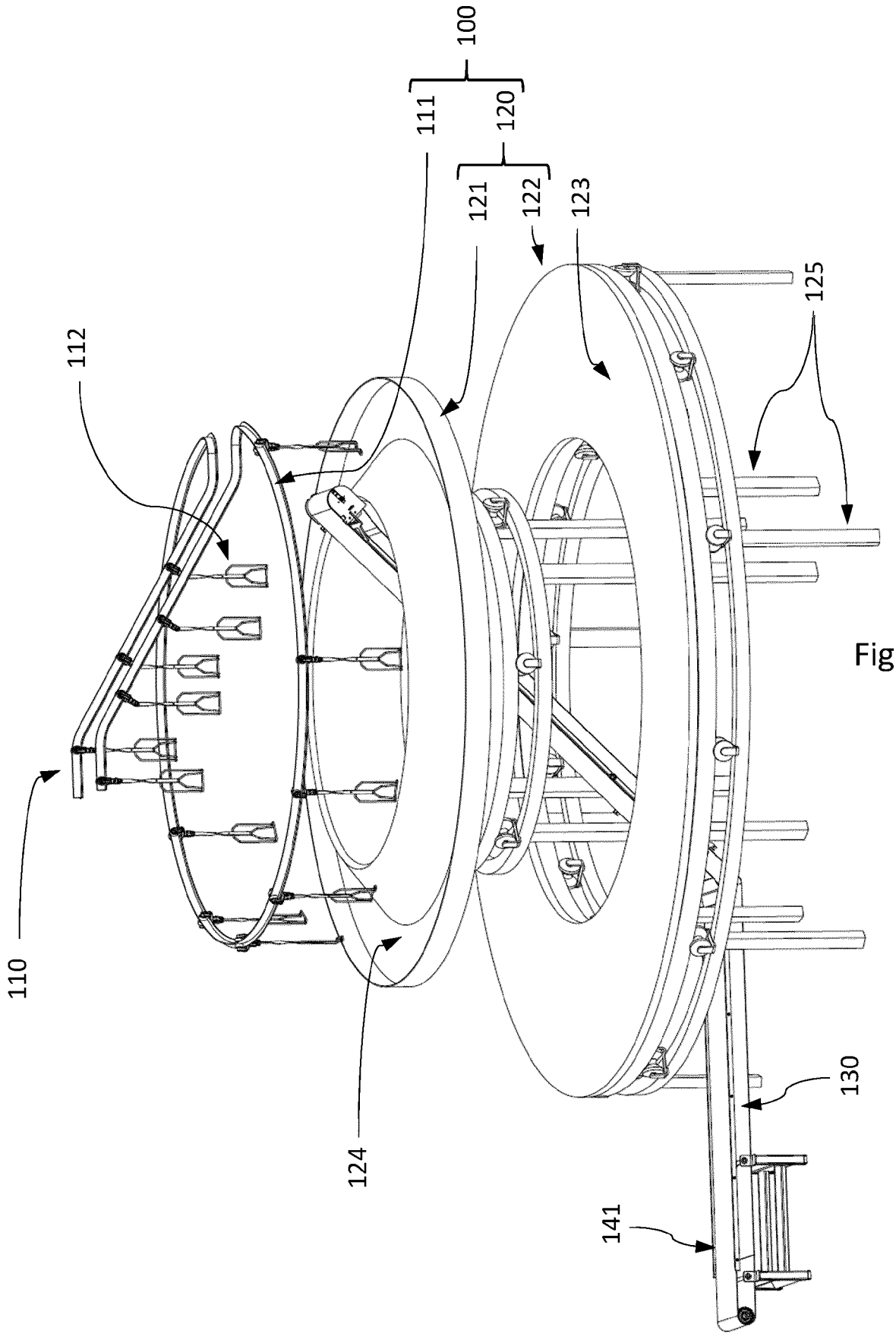

Fig.1

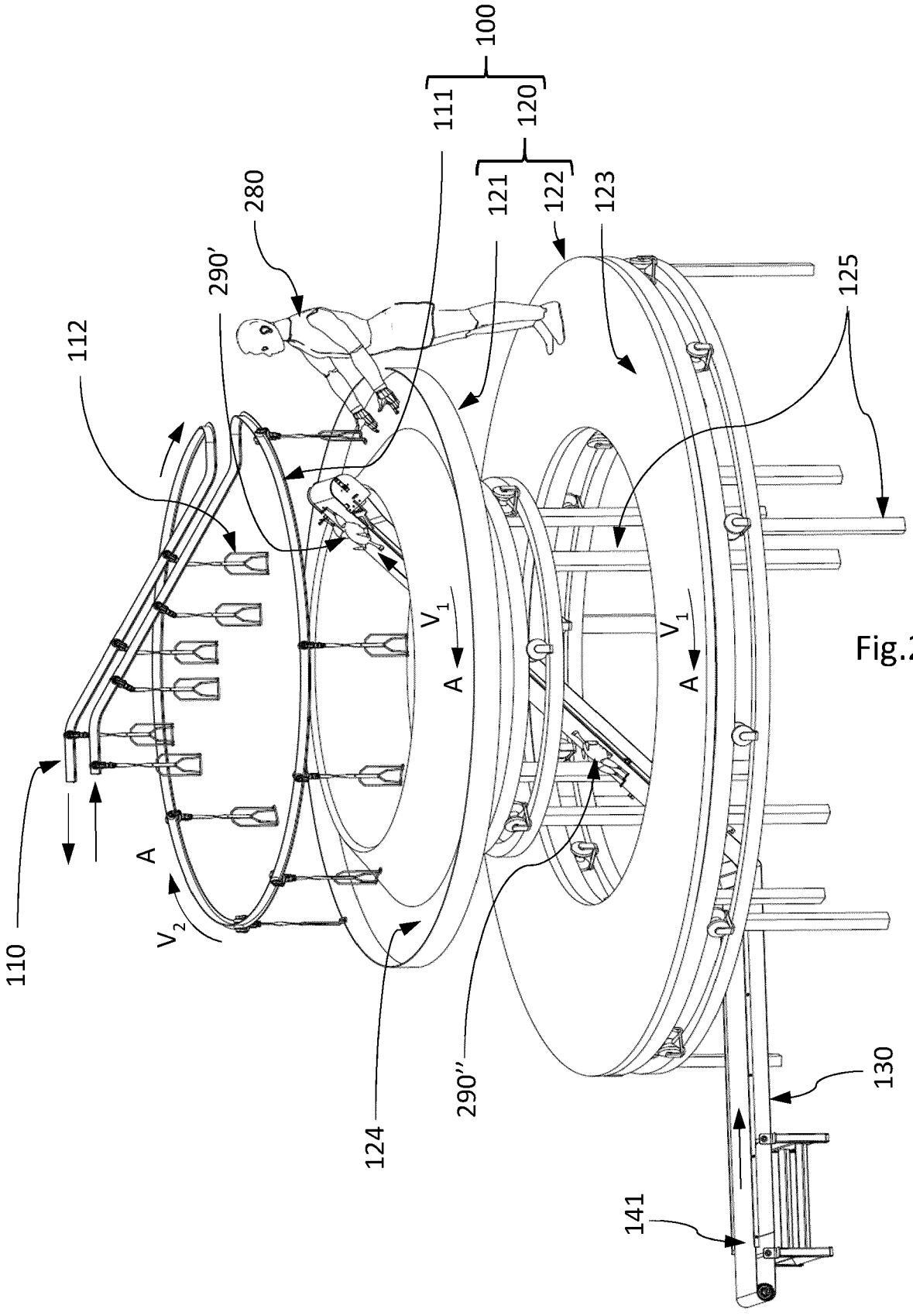
100
111
120
121
122
123
125
280
290'
112
110
A
V_2
V_1
A
V_1
A
124
290''
130
141

Fig.2A

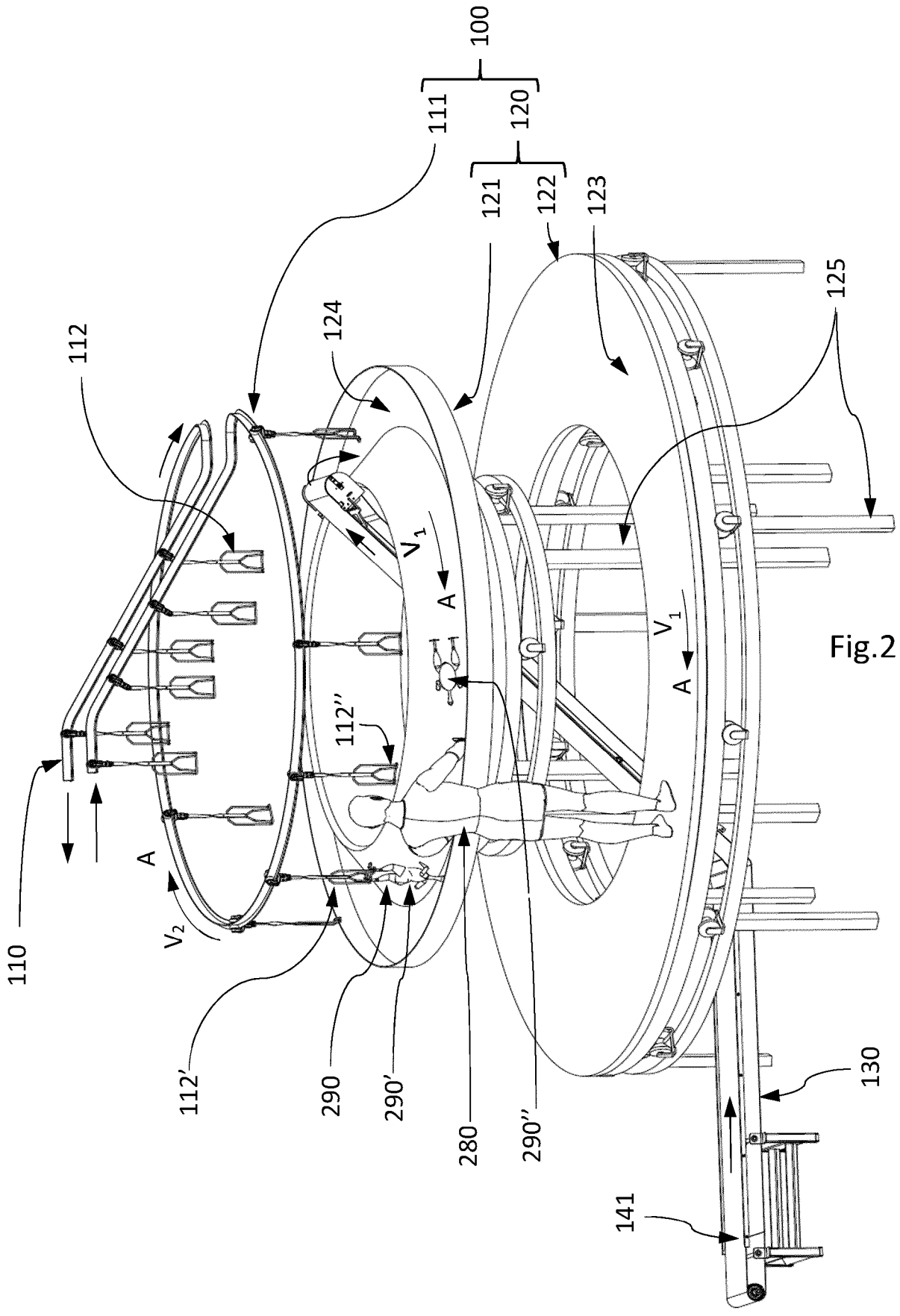
100
111
120
121
122
123
125
124
112
V_1
A
V_1
A
112''
A
V_2
110
112'
290
290'
280
290''
130
141

Fig.2B

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EUROPEAN SEARCH REPORT

Application Number
EP 21 16 7190

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y,D	WO 00/41568 A2 (STORK PMT [NL]; NIEUWELAAR ADRIANUS J VAN DEN [NL] ET AL.) 20 July 2000 (2000-07-20) * page 1, lines 3-4 * * page 31, line 32 - page 36, line 8 * * figures 26-32 *	1-14	INV. A22B7/00 A22C21/00
Y,D	US 4 090 275 A (JORGENSEN OLAF V ET AL) 23 May 1978 (1978-05-23) * column 1, lines 11-22 * * column 2, line 66 - column 3, line 2 * * column 7, line 66 - column 8, line 53 * * figures 3-5 *	1-14	
Y	EP 0 487 075 A1 (RINIKER AG [CH]) 27 May 1992 (1992-05-27) * column 1, lines 1-27 * * column 1, line 40 - column 2, line 14 * * column 4, line 3 - column 5, line 3 * * figures 1-3 *	1-14	TECHNICAL FIELDS SEARCHED (IPC) A22B A22C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	18 August 2021	Postma, Rob

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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